METHODS FOR RESETTING STALLED PUMPS IN ELECTRONICALLY CONTROLLED DISPENSING SYSTEMS

TECHNICAL FIELD

The present invention is generally directed to fluid dispensing systems. In particular, the present invention is directed to dispensers which allow only designated refill containers with dispensable material to be installed therein and, if desired, installed by selected distributors. More specifically, the present invention is directed to resetting stalled pumps used in electronically keyed fluid dispensing systems.

BACKGROUND ART

It is well known to provide fluid dispensers for use in restaurants, factories, hospitals, bathrooms and the home. These dispensers may contain fluids such as soap, anti-bacterial cleansers, disinfectants, lotions and the like. It is also known to provide dispensers with some type of pump actuation mechanism wherein the user pushes or pulls a lever to dispense a quantity of fluid into the user's hands. "Hands-free" dispensers may also be utilized wherein the user simply places their hand underneath a sensor maintained by a dispenser housing and a quantity of fluid is dispensed by a motorized pump. Related types of dispensers may be used to dispense powder, aerosol materials or paper products.

Dispensers may directly hold a quantity of fluid, but these have been found to be messy and difficult to service. As such, it is known to use refill bags or containers that hold a quantity of fluid and provide a pump and nozzle mechanism. These refill bags are advantageous in that they are easily installed without a mess. And the dispenser can monitor usage to indicate when the refill bag is low and provide other dispenser status information.

Refill containers with identifiers such as electronic or mechanical keys have been developed so as to prevent unauthorized persons from substituting inferior product into a dispensing system. Specifically, various types of mechanical or electronic keys may be used so as to associate a refill container and the fluid contained therein with a specific dispenser. Electronic keys may include, but are not limited to, magnetic sensors, optical sensors, radio frequency identification devices, and the like. In these types of dispensers, it is critical that the identifier be properly positioned or associated on the refill container and that the refill container be properly received in the dispenser housing. If an identification key is not properly positioned, then the refill container is not read by the dispensing system and is rendered inoperative. However, it is possible for the refill container to be operatively detected by the dispensing system but still installed in such a way that the pump and nozzle mechanism jams. An improperly installed refill container that stalls or jams may cause damage to the pump actuator maintained by the refill container and/or a motor assembly and associated linkage that moves the pump actuator. An improperly installed refill container or stalled pump actuator may also result in excess fluid being dispensed.

A pump actuator maintained by the dispenser housing or the pump and nozzle mechanism maintained by the refill container may jam or stall for any number of reasons. For example, the pump may be clogged by the fluid material from previous dispense cycles. Debris or other impediments may be blocking movement of the pump actuator or, as noted, the refill container may not be properly installed into a dispensing housing. For example, the pump can be installed underneath

the actuator preventing operation of the dispenser and the refill container. In the past, the problem was solved by a user recognizing a stall condition and then the user correctly manually resetting the refill container within the dispenser housing. As such, the method of solving prior pump stalling events was unreliable and, unfortunately, the implemented fix may further damage the system. Therefore a need is present in the art for improved methods of resetting stalled pumps in electronically controlled dispensing systems.

SUMMARY OF THE INVENTION

In view of the foregoing it is a first aspect of the present invention to provide methods for resetting stalled pumps in electronically keyed dispensing systems.

Another aspect of the present invention, which shall become apparent as the detailed description proceeds, is achieved by a method for resetting a stalled pump in a fluid dispensing system, the method comprising determining whether a refill container is received in the dispensing system, and moving a pump actuator to a loading position when the refill container is removed.

Still another aspect of the present invention is to provide a method for resetting a stalled pump in a fluid dispending system comprising starting a run timer, starting a pump actuator, determining whether the pump actuator is still dispensing fluid from the fluid dispensing system upon lapsing of the run timer, and moving the pump actuator in an opposite direction if the pump actuator is still dispensing upon expiration of the run timer.

Yet another aspect of the present invention is to provide a method for resetting a stalled pump in a fluid dispensing system comprising detecting opening of a cover, energizing a motor to move an actuator to a loading position, determining when the actuator is at the loading position, and turning the motor off.

Still another aspect of the present invention is to provide a dispensing system comprising a refill container filled with product, a housing adapted to accept the refill container, a pump maintained by either the refill container or the housing so as to dispense product from the refill container, wherein the pump has a loading position and a dispensing position, and an electronic keying mechanism associated with the pump wherein the electronic keying mechanism is configured to automatically return the pump to the loading position when a stall condition is detected.

These and other aspects of the present invention, as well as the advantages thereof over existing prior art forms, which will become apparent from the description to follow, are accomplished by the improvements hereinafter described and claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

For a complete understanding of the objects, techniques and structure of the invention, reference should be made to the following detailed description and accompanying drawings, wherein:

FIG. **1** is a front perspective view of an electronically controlled dispensing system made in accordance with the concepts of the present invention;

FIG. **2** is a schematic diagram of the electronically controlled dispensing system;

FIG. **3** is an operational flow chart of a method for resetting a stalled pump in the dispensing system;